added. Accordingly, Claims 1, 2, 4-6, 8-16, 18-27 and 30-31 are currently pending in the Application.

I. Formal Matters and Objections

The Examiner has objected to the drawings under 37 C.F.R. 1.84(p)(4) for having reference numbers used to designate more than one item in FIGURE 2B. In response, the Applicants have submitted with the present Amendment a "REQUEST FOR APPROVAL OF PROPOSED DRAWING CORRECTION" to overcome the Examiner's objection. In addition, appropriate portions of the specification have also been amended to comport with amended FIGURE 2B. As a result, the Applicants respectfully request the Examiner withdraw the objection.

The Examiner has objected to FIGURE 6 of the drawings under M.P.E.P. §608.02(g) for failing to designate the figure "Prior Art." In response, the Applicants have submitted with the present Amendment a "REQUEST FOR APPROVAL OF PROPOSED DRAWING CORRECTION" to overcome the Examiner's objection. As a result, the Applicants respectfully request the Examiner withdraw the objection.

The Examiner has objected to the drawings under 37 C.F.R. 1.83(p)(5) for failing to disclose reference numeral 99, as used in FIGURE 11, in the Detailed Description of the Application. In response, the Applicants have submitted with the present Amendment a "REQUEST FOR APPROVAL OF PROPOSED DRAWING CORRECTION" to overcome the Examiner's objection. As a result, the Applicants respectfully request the Examiner withdraw the objection.

The Examiner has objected to the specification as containing informalities, namely, various typographical or grammatical errors. In response, the Applicants have amended various portions of

the specification to correct these inadvertent errors and appreciate the Examiner's diligence in finding and bringing these errors to the Applicants' attention.

The Examiner has objected to the title of the claimed invention as not being descriptive. In response, the Applicants have amended the title to a more descriptive title.

The Examiner has objected to the specification as having incorrect statements regarding the density of an oxide formed using the present invention. Although the Applicants do not necessarily agree with the Examiner's interpretation of the cited portions of the specification, the Applicants have removed the cited portions in order to expedite prosecution of the Application and because the text therein is theoretical and does not substantively affect the scope of the present invention.

II. Rejection of Claims 3, 5-11, 13, 14, 17-19, 21, 22 and 31 under 35 U.S.C. §112

The Examiner has rejected Claims 3, 7, 13, 17, 21 and 22 under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the Application was filed, had possession of the claimed invention. Specifically, the Examiner asserts that the repeated use of the term "ambient temperature" throughout the various steps recited in the claims in inappropriate. Initially, the Applicants have canceled Claims 3, 7 and 17. In addition, although the Applicants do not necessarily agree with the Examiner's position, the Applicants have amended appropriate claims to more clearly recite the intended subject matter, to fully comply with the requirements of §112 and to expedite prosecution of the Application. As a result, the Applicants request the Examiner withdraw the §112 rejection.

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The Examiner has also rejected Claims 5, 6, 8-11, 14, 18, 19 and 31 under 35 U.S.C. §112, first paragraph, for being dependent on Claims 3, 7, 13, 17, 21 and 22, which have been previously rejected under 35 U.S.C. §112, first paragraph. As discussed above, the recitations in the appropriate claims from which Claims 5, 6, 8-11, 14, 18, 19 and 31 depend have been amended to fully comply with the requirements of §112. Thus, the rejection of claims 5, 6, 8-11, 14, 18, 19 and 31 on that basis alone no longer stands.

The Examiner has rejected Claim 12 under 35 U.S.C. §112, first paragraph, because the Examiner believes the recited range of 0-25% is not supported by the specification. Although the Applicants do not necessarily agree with the Examiner, Claim 12 has been amended to clarify the range and to fully comply with the requirements of §112.

III. Rejection of Claims 1-4, 6-11, 13-14, 16, 17, 19, 20, 23 and 30 under 35 U.S.C. §102

The Examiner has rejected Claims 1-4, 6-11, 13-14, 16, 17, 19, 20, 23 and 30 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,316,300 to Ozeki, *et al* (Ozeki). The Applicants have canceled Claims 3, 7 and 17, without prejudice or disclaimer.

The present invention is directed to a process wherein the first oxide is formed in conjunction with at least two ramping steps that both occur below the threshold temperature. In contrast to this, Ozeki teaches only a first ramp followed by a main oxidation that occurs at 875°C, which is followed by a second ramp to 1050°C and another oxidation at that temperature. (See FIG. 6A and Cols. 8 and 9). There are no other teachings that the Applicants can find where Ozeki teaches additional ramps during the first oxidation cycle as recited in the claims set forth above. As such, Ozeki does not anticipate these claims.

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The Examiner has also rejected Claims 1, 2, 4, 7-11, 13, 14, 16, 20, 23 and 30 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,518,630 to Grasser, *et al* (Grasser). Grasser discloses beginning the oxidation process at a temperature that ranges from about 700°C to 900°C, which is then followed by a ramp up to a temperature that can range from 850°C to 1050°C and during which another oxidation cycle takes place. (See the drawing and Col 2, lines 50-68 and Col. 3, lines 1-29). There are no other teachings in Grasser that disclose a process for forming a first oxide portion, wherein the process includes increasing from an initial temperature to a first temperature below a threshold temperature at a first rate, and then increasing from the first temperature to a second temperature below a threshold temperature at a second rate, as recited in the claims set forth above. In addition, Grasser does not disclose the process for forming a second oxide portion, wherein the process includes increasing from the second temperature below the threshold temperature to a third temperature at a third rate, and then increasing from the third temperature to a temperature above the threshold temperature at a fourth rate, as also recited in the claims set forth above. As a result, like Ozeki, Grasser also does not anticipate Claims 1 and 16, and their respective dependent claims.

The Examiner has still further rejected Claims 1, 4, 16, 20, 23 and 30 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,826,779 to Wright, *et al* (Wright). Wright discloses annealing a substrate in an atmosphere having oxygen and at a temperature of around 900°C. It should be noted that no ramp or ramp rate is disclosed. (Col. 4, lines 11-24). Then, after a masking step and an implantation step, a restructuring anneal is conducted at 1050°C. (Col 4, lines 19-48). Again, it should be noted that no ramping or ramp rate is disclosed. There are no other teachings in Wright that disclose a process for forming a first oxide portion, wherein the process

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includes increasing from an initial temperature to a first temperature below a threshold temperature at a first rate, and then increasing from the first temperature to a second temperature below a threshold temperature at a second rate, as recited in the claims set forth above. In addition, Wright does not disclose the process for forming a second oxide portion, wherein the process includes increasing from the second temperature below the threshold temperature to a third temperature at a third rate, and then increasing from the third temperature to a temperature above the threshold temperature at a fourth rate, as also recited in the claims set forth above. Thus, Wright also does not anticipate the subject of the claims.

In conclusion, Ozeki, Grasser and Wright do not teach or disclose the above-mentioned elements recited by independent Claims 1 and 16, and, therefore, are not anticipating references of Claims 1 and 16. Claims 2, 4-6, 8-15, 18-27 and 30-31 depend from Claims 1 and 16, respectively. Thus, Ozeki, Grasser and Wright are also not anticipating references for these dependent claims. Accordingly, the Applicants respectfully request the Examiner withdraw the §102 rejection with respect to the pending claims.

IV. Rejection of Claims 3, 5, 7, 8, 11, 12, 15, 17, 18, 22, 24, 25 and 31 under 35 U.S.C. §103

The Examiner has first rejected dependent Claims 3 and 17 under 35 U.S.C. §103(a) as being unpatentable over Grasser in view of U.S. Patent No. 5,817,581 to Bayer, *et al.* (Bayer). As discussed above, Claims 3 and 17 have been canceled and the limitations therein have been incorporated into independent Claims 1 and 16. Grasser does not teach all of the elements of independent Claims 1 and 16. Furthermore, Grasser does not suggest the missing elements since Grasser teaches raising the temperature to only one temperature below a threshold temperature (e.g.,

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approximately 800°C), and only one temperature above the threshold temperature (e.g., approximately between 1000°C). As a result, one who is skilled in the art would not be motivated by Grasser to form an oxide having first and second portions according to the specific elements recited in independent Claims 1 and 16.

Furthermore, Bayer also does not teach or suggest the missing elements. Bayer has only been cited by the Examiner for the use of first and second rates when increasing a temperature to a temperature below a threshold temperature. In fact, Bayer does not even teach the formation of a first oxide portion in conjunction with the first and second temperature increases (see Col. 2, lines 61-64), but rather forming the oxide portions during a third temperature increase that begins below the threshold temperature and continues above the threshold temperature. Therefore, Bayer does not cure the deficiencies of Grasser. Thus, the combination of Grasser and Bayer does not establish a *prima facie* case of obviousness of independent Claims 1 and 16.

The Examiner has next rejected dependent Claims 7, 8, 11, 12 and 17 under 35 U.S.C. §103(a) as being unpatentable over Wright in view of Grasser. As discussed above, Claim 17 has been canceled, and Wright does not teach all of the elements of independent Claims 1 and 16. In addition, Wright does not suggest the missing elements since, like Grasser, Wright merely teaches raising the temperature to only one temperature below a threshold temperature (e.g., approximately 900°C), and only one temperature above the threshold temperature (e.g., approximately between 1050°C). As a result, one who is skilled in the art would not be motivated by Wright to form an oxide having first and second portions according to the specific elements recited in independent Claims 1 and 16.

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Furthermore, as mentioned above, Grasser also does not teach or suggest the missing elements, and, therefore, does not cure the deficiencies of Wright. Since Claims 7, 8, 11 and 12 depend from independent Claims 1 and 16, respectively, the combination of Wright and Grasser does not establish a *prima facie* case of obviousness of Claims 7, 8, 11 and 12.

The Examiner has next rejected dependent Claims 5, 18, 22 and 31 under 35 U.S.C. §103(a) as being unpatentable over Ozeki in view of U.S. Patent No. 6,207,591 to Aoki. As discussed above, Ozeki does not teach all of the elements of independent Claims 1 and 16. In addition, Ozeki does not suggest the missing elements, since Ozeki teaches annealing the substrate at the same temperature above a threshold temperature used to finish growing an oxide layer. In contrast, the claimed invention teaches a process for forming a second oxide portion, wherein the process includes increasing from the second temperature below the threshold temperature to a third temperature at a third rate, and then increasing from the third temperature to a temperature above the threshold temperature at a fourth rate. Since Ozeki teaches annealing a finished oxide, rather than increasing the temperature in conjunction with the process of forming a second oxide, Ozeki does not suggest the elements of Claims 1 and 16.

Furthermore, Aoki also does not teach or suggest the missing elements. Aoki has only been cited by the Examiner for the heating rates it uses for forming oxides on its semiconductor substrates. Therefore, Aoki does not cure the deficiencies of Ozeki. Since Claims 5, 18, 22 and 31 depend from independent Claims 1 and 16, respectively, the combination of Ozeki and Aoki does not establish a *prima facie* case of obviousness of Claims 5, 18, 22 and 31.

The Examiner has next rejected dependent Claims 5, 18, 22, 25 and 31 under 35 U.S.C. §103(a) as being unpatentable over Grasser in view of Bayer, and further in view of Aoki. As

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discussed above, Grasser does not teach or suggest all of the elements of independent Claims 1 and 16. Furthermore, as mentioned above, neither Bayer nor Aoki teaches or suggests the missing elements, and, therefore, neither reference cures the deficiencies of Grasser. Since Claims 5, 18, 22, 25 and 31 depend from independent Claims 1 and 16, respectively, the combination of Grasser, Bayer and Aoki does not establish a *prima facie* case of obviousness of Claims 5, 18, 22, 25 and 31.

The Examiner has next rejected dependent Claims 15 and 24 under 35 U.S.C. §103(a) as being unpatentable over any of Ozeki, Wright or Grasser in view of Wolf. As discussed above, Ozeki, Wright or Grasser do not teach or suggest all of the elements of independent Claims 1 and 16. Furthermore, Wolf also does not teach or suggest the missing elements, and has been cited by the Examiner only for its use of monocrystalline structures in semiconductor substrates. Therefore, Wolf does not cure the deficiencies of Ozeki, Wright or Grasser. Since Claims 15 and 24 depend from independent Claims 1 and 16, respectively, the combination of Ozeki, Wright or Grasser with Wolf does not establish a *prima facie* case of obviousness of Claims 15 and 24.

In conclusion, the various combinations of Ozeki, Wright, Grasser, Bayer, Aoki and Wolf fail to teach or suggest the inventions recited in independent Claims 1 and 16 and their dependent claims when considered as a whole. The combinations, therefore, do not establish a *prima facie* case of obvious of Claims 3, 5, 7, 8, 11, 12, 15, 17, 18, 22, 24, 25 and 31. Accordingly, the Applicants respectfully request the Examiner withdraw the numerous §103(a) rejections with respect to the pending claims.

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V. Conclusion

The Applicants respectfully request that the rejections and objections be withdrawn and solicit a Notice of Allowance for Claims 1, 2, 4-6, 8-16, 18-27 and 30-31. The Applicants further attach hereto a marked-up version of the amendments made to the specification and the claims. The attached page is captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**."

Respectfully submitted,
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Dated: 8-5-02

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APPLICATION NO. CHEN 4-17-157

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

(1) Please replace the paragraph beginning on page 1, line 3, with the following paragraph:

--This present application claims priority from Provisional Application Serial No. [60/140,999] 60/140,666 (filed June 24, 1999).

(2) Please replace the paragraph beginning on page 2, line 8, with the following paragraph:

--In order to address the reliability issues discussed above, a variety of approaches have been tried. For example, it is known that the best oxides for many IC devices are grown rather than deposited oxides. Furthermore, the higher growth temperatures may yield a better quality oxide. Unfortunately, there are problems associated with fabricating oxides at high temperatures by conventional techniques. For example, in achieving the high temperatures required in the high temperature oxide growth sequence, the overall thickness of the oxide grown tends [ti] to increase. As a result the oxide may be too thick for a reduced dimension device. Thus, in the effort to fabricate a better equality oxide, device scaling objectives may be defeated. Moreover, when cooling down from the high growth temperatures, the viscosity of the [groan] grown oxide increases and growth induced stress may result. Given these issues, it is customary in the semiconductor industry to grow oxides at [a] low temperatures. The drawback to this practice is that by growing oxide at lower temperatures, the oxide quality may be compromised. This reduction in quality adversely impacts reliability of the oxide for reasons discussed above.--

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(3) Please replace the paragraph beginning on page 6, line 20, with the following paragraph:

--Turning to Fig. 2b, an illustrative sequence for fabricating the oxide layer 30 by fast thermal processing (FTP) is shown. (Cross sectional views of this exemplary growth sequence and the resulting oxide structure are shown in Figs. 3-5). Segment [20] 200 indicates a wafer boat push step at an initial temperature of approximately 300°C-700°C, with nitrogen flow of 8.0L/min and 0.02 to 1% ambient oxygen concentration. These parameters are chosen to minimize the growth of native oxide, which can degrade oxide quality as well as consume the allowed oxide thickness determined by scaling parameters (referred to as oxide thickness budget or scaling budget). Additionally, a load lock system or a hydrogen bake, well known to one of ordinary skill in the art, can be used to impede the growth of this undesirable low-temperature oxide.--

(4) Please replace the paragraph beginning on page 6, line 30, with the following paragraph:

--Segment [21] 210 is a rapid upward temperature increase at approximately 50-125°C per minute to about 750°C-850°C. This step is carried out at a very low oxygen ambient concentration (on the order of 0.05% to 5%) and a high nitrogen ambient. One aspect of the present embodiment relates to the step of upwardly ramping the temperature at a relatively high rate (segment [21] 210) to minimize the thickness of the oxide formed in this segment (known as the ramp oxide). This helps control the overall thickness of the oxide 30. Thus, through this step, the desired higher growth temperatures (segments [23] 230 and [26] 260) may be attained without sacrificing the oxide thickness budget. Moreover, this rapid rise in temperature at low ambient oxygen concentrations retards the growth of lower temperature oxide, which may be of inferior quality, as discussed above.--

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(5) Please replace the paragraph beginning on page 7, line 7, with the following paragraph:

--Segment [22] <u>220</u> is a more gradual increase in temperature. Segment [22] <u>220</u> proceeds at approximately 10-25°C per minute. In the exemplary embodiment the temperature reached at the end of segment [22] <u>220</u> is in the range of approximately 800°C to 900°C. The same oxygen and nitrogen flows/concentrations used in segment [21] <u>210</u> are maintained in segment [22] <u>220</u>. This control of the ramp up in temperature in segment [22] <u>220</u> is also important as it helps to prevent overshooting the growth temperature of segment [23] <u>23</u>. Finally, the low concentration of oxygen in segment [22] <u>220</u> selectively retards the growth of oxide during the temperature increase to a higher growth temperature. Again this helps to preserve the oxide thickness budget.--

(6) Please replace the paragraph beginning on page 7, line 16, with the following paragraph:

--Segment [23] <u>230</u> is a low temperature oxide (LTO) growth step. In this step, the ambient oxygen concentration is about 0.1% to about 10% while the ambient nitrogen concentration is 90-99.9%. [Dichloroethyline] <u>Dichloroethylene</u> may be added at 0-0.5% for a time that is dependent upon the desired thickness as would be appreciated by one of ordinary skill in the art. At the end of segment [23] <u>230</u>, an anneal in pure nitrogen may be carried out. In the illustrative sequence of Fig. 2, during segments [20-22] 200-220 an oxide is grown having a thickness in the range of 5-10 Å. Segment [23] <u>230</u> results in the growth of approximately 2.5-10 Å of oxide. Upon completion of segment [23] <u>230</u>, the growth of the first oxide portion 31 (in Fig. 4) is completed. Illustratively, this first oxide portion is grown at a temperature lower than the viscoelastic temperature of silicon dioxide (T_{ve}), which is approximately 925°C. The first oxide portion 31 may comprise 25-98% of the total thickness of the oxide layer 30. In an exemplary embodiment in which the oxide layer 30

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has a thickness of 30 Å or less, the first oxide portion 31 has a thickness of approximately 7.5-20Å. As discussed more fully herein, applicants theorize that the first oxide portion 31 acts as a sink for stress relaxation that occurs during the growth of second oxide portion 32 under first oxide portion 31.--

(7) Please replace the paragraph beginning on page 7, line 32, with the following paragraph:

--Segment [24] 240 is the first segment in the temperature increase to a temperature above the viscoelastic temperature of silicon dioxide. This ramp up in temperature occurs relatively slowly, at a rate of approximately 5-15°C per minute and in a nearly pure nitrogen ambient (the ambient concentration of oxygen in this segment is illustratively 0%-5%). The temperature reached at the end of segment [24] 240 is approximately 50°C below the high temperature oxide (HTO) growth temperature of segment [26] 260. Segment [25] 250 is a modulated heating segment in which the temperature is increased at a rate of approximately 5-10°C per minute to a temperature above the viscoelastic temperature. In the illustrative embodiment the HTO growth temperature is in the range of 925-1100°C. The same flows/concentration of oxygen and nitrogen of segment [24] 240 are used in segment [25] 250. At the end of segment [25] 250, the HTO growth temperature is reached.--

(8) Please replace the paragraph beginning on page 8, line 10, with the following paragraph:

--Segments [24] 240 and [25] 250 are useful steps in the [of the] exemplary embodiment of the present invention. As was the case in the temperature ramp-up to segment [23] 230 the (LTO growth segment) the careful ramp-up of temperature in segments [24] 240 and [25] 250 prevents overshooting the desired growth temperature, in this case the HTO growth temperature of the present

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invention. The rate of temperature increase at the illustrated low ambient oxygen concentration is useful in retarding oxide growth thereby preserving the oxide thickness budget. Finally, applicants believe that the careful heating in a low oxygen ambient in segments [24] <u>240</u> and [25] <u>250</u> reduces growth stress, and consequently a reduces the occurrence of oxide growth defects (e.g. slip dislocations and stacking faults).--

(9) Please replace the paragraph beginning on page 8, line 19, with the following paragraph:

--Segment [26] <u>260</u> is the HTO growth step, where the growth temperature is illustratively above the viscoelastic temperature of silicon dioxide. The temperature achieved at the end of segment [25] <u>250</u> is maintained in the growth step in segment [26] <u>260</u> in a [0 to] 25% <u>or less</u> oxygen ambient for approximately 2 to 20 minutes so that an additional 2-12 Å of oxide may be grown at high temperature. The second portion may comprise on the order of 2-75% of the total thickness of the oxide layer 30. The final portion of segment [26] <u>260</u> may include an anneal in pure nitrogen. Applicants believe (again without wishing to <u>be</u> bound <u>to such a belief</u>) that the high temperature growth above the viscoelastic temperature (approximately 925°C) results in the growth of an oxide (second oxide portion 32) having certain properties. [For example, it is believed that the second oxide portion 32 is more amorphous, and thereby has little, if any, crystalline structure and short range order. This results in a denser oxide. To this end, the SiO_4 tetrahedron structure connected by O-Si-O chain, (characteristic of silicon dioxide) is more random than in conventional oxides. The random nature of the molecular structure of the second oxide portion 32 results in a more densely packed oxide. Accordingly, as will be appreciated through the discussion herein, the

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second oxide portion 32 is believed to have shorter Si-O bond length and greater Si-O bond strength when compared to conventionally grown oxide.]--

(10) Please replace the paragraph beginning on page 9, line 1, with the following paragraph:

--Segment [27] 270 of the exemplary embodiment of Fig. 2 is a cooling segment also referred to as a modulated cooling segment. A temperature ramp down is carried out at a rate of approximately 2-5°C per minute to a temperature at the end of segment [27] 270 which is below the viscoelastic temperature. For example, the temperature reached at the end of segment [27] 270 is in the range of 900- 800°C. Segment [27] 270 is carried out in a nearly pure nitrogen ambient, which is inert. During the cooling of a grown oxide to below the viscoelastic temperature, stress may result in the oxide, particularly at the substrate-oxide interface. As a result of this stress, defects such as slip dislocations and oxidation induced stacking faults may be formed at energetically favored sites such as heterogenities and asperities. These defects may be viewed as routes for diffusional mass transport and leakage current paths which can have a deleterious impact on reliability and device performance. The modulated cooling segment, and the stress absorbing or stress sink characteristics of the first oxide portion 31 (particularly during the modulated cooling segment) results in a substantially stress free oxide-substrate interface. Moreover, the defect density is reduced. Finally, segment [28] 280 represents a further ramp down at a faster rate on the order of approximately 35-65°C per minute in an inert ambient such as pure nitrogen. Segment [29] 290 is the boat pull at about 500°C in a pure nitrogen ambient.--

(11) Please replace the paragraph beginning on page 14, line 28, with the following paragraph:

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--Figure 14 presents various leakage plots for a p-type tub at a voltage of 2.0 volts. Plot 134 is for a gate oxide in accordance with the present invention having a thickness of 28 Å, and plot 135 is for a conventional oxide of the same thickness. Plot [137] 136 is for an oxide of invention of the present disclosure having a thickness of 32 Å, while plot 137 is for a conventional oxide layer having a thickness of 32 Å. From Figs. 13 and 14 it can be appreciated that the oxide of the present invention offers a 8-10 times improvement leakage current. Moreover, with this significant improvement in leakage current, as one of ordinary skill in the art would readily appreciate, the charge control over the channel is improved, with improved sub-threshold characteristics (I_{off}).--

(12) Please replace the title of the Application with the following title:

--PROCESS FOR OXIDE FABRICATION USING OXIDATION STEPS BELOW AND ABOVE A THRESHOLD TEMPERATURE--

IN THE CLAIMS:

(1) Please amend Claim 1 as follows:

1. (Amended) A process for fabricating an oxide, the process comprising:

(a) forming a first oxide portion over a substrate [at a temperature below a threshold temperature] , wherein forming said first oxide portion includes increasing from an initial temperature to a first temperature below a threshold temperature at a first ramp rate, increasing from said first temperature below said threshold temperature to a second temperature below said threshold temperature at a second ramp rate, and generating said first oxide portion; and

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(b) forming a second oxide portion under said first oxide portion [at a temperature above said threshold temperature] , wherein forming said second oxide portion includes increasing from said second temperature below said threshold temperature to a third temperature at a third ramp rate, increasing from said third temperature to a temperature above said threshold temperature at a fourth ramp rate, and generating said second oxide portion.

(2) Please cancel Claim 3 without prejudice or disclaimer.

(3) Please amend Claim 5 as follows:

5. (Amended) A process as recited in claim [3]1, wherein said first temperature below said threshold temperature is approximately in the range of 750°C to 850°C and said first ramp rate is approximately in the range of 50°C to 125°C per minute.

(4) Please amend Claim 6 as follows:

6. (Amended) A process as recited in claim [3]1, wherein said second temperature below said threshold temperature is approximately in the range of 800°C to 900°C and said second ramp rate is approximately in the range of 10°C to 25°C per minute.

(5) Please cancel Claim 7 without prejudice or disclaimer.

(6) Please amend Claim 8 as follows:

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8. (Amended) A process as recited in claim [7]<u>1</u>, wherein said temperature above said threshold temperature is in the range of approximately 925°C to 1100°C.

(7) Please amend Claim 9 as follows:

9. (Amended) A process as recited in claim [7]<u>1</u>, wherein said [first] <u>third ramp</u> rate is approximately in the range of 5°C to 15°C per minute and said [second] <u>third</u> temperature is approximately in the range of 875°C to 1050°C.

(8) Please amend Claim 10 as follows:

10. (Amended) A process as recited in claim [7]<u>1</u>, wherein said [second] <u>fourth ramp</u> rate is approximately in the range of 5-10°C per minute and said temperature above said threshold temperature is approximately in the range of 925°C to 1100°C.

(9) Please amend Claim 11 as follows:

11. (Amended) A process as recited in claim [7]<u>1</u>, wherein said temperature above said threshold temperature is maintained for a period of time and in an oxidizing ambient.

(10) Please amend Claim 12 as follows:

12. (Amended) A process as recited in claim 11, wherein said oxidizing ambient includes an oxygen concentration of [0 to] <u>about</u> 25% <u>or less</u>.

(11) Please amend Claim 13 as follows:

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13. (Amended) A process as recited in claim 2, wherein said cooling further comprises:

reducing [an ambient temperature] from said temperature above said threshold temperature to an intermediate temperature at a first rate; and

reducing [said ambient temperature] <u>from said intermediate temperature</u> to a final temperature at a second rate.

(12) Please amend Claim 14 as follows:

14. (Amended) A process as recited in claim 13, wherein said first rate is approximately in the range of <u>about</u> 2°C to 5°C <u>per minute</u> and said intermediate temperature is approximately in the range of <u>about</u> 800°C to 900°C.

(13) Please amend Claim 16 as follows:

16. (Amended) A process for fabricating an oxide, the process comprising:

(a) exposing said substrate to a first oxidizing ambient [at a temperature below a threshold temperature] <u>, wherein exposing said substrate to a first oxidizing ambient includes increasing from an initial temperature to a first temperature below a threshold temperature at a first ramp rate, increasing from said first temperature to a second temperature below said threshold temperature at a second ramp rate, and growing at least a portion of said oxide</u>;

(b) exposing said substrate to a second oxidizing ambient [at a temperature above said threshold temperature] <u>, wherein exposing said substrate to a second oxidizing ambient includes increasing from said second temperature to a third temperature at a third ramp rate, and increasing</u>

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from said third temperature to a temperature above said threshold temperature at a fourth ramp rate; and

(c) cooling said substrate to a temperature below said threshold temperature.

(14) Please cancel Claim 17, without prejudice or disclaimer.

(15) Please amend Claim 18 as follows:

18. (Amended) A process as recited in claim [17]16, wherein said first temperature below said threshold temperature is in the range of 750°C to 850°C and said first ramp rate is approximately 50°C-125°C per minute.

(16) Please amend Claim 19 as follows:

19. (Amended) A process as recited in claim [17]16, wherein said second temperature below said threshold temperature is approximately 800°C-900°C and said second ramp rate is approximately 10°C-25°C per minute.

(17) Please amend Claim 21 as follows:

21. (Amended) A process as recited in claim 16, wherein step (b) further comprises:

increasing [an ambient temperature] from [a first] said second temperature to [a second] said third temperature at a ramp rate of approximately 5-15°C/minute in an ambient oxygen concentration of approximately 0%-5%;

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increasing [said ambient temperature] from said [second] <u>third</u> temperature to said temperature above said threshold temperature at a <u>ramp</u> rate of 5-10°C/minute in an ambient oxygen concentration of approximately 0%-5%; and

growing at least a portion of the oxide in an oxygen ambient concentration of about [0-25%] <u>25% or less</u>.

(18) Please amend Claim 22 as follows:

22. (Amended) A process as recited in claim 16, wherein step (c) further comprises:

reducing [an ambient temperature] from said temperature above said threshold temperature to approximately 800°C to 900°C at a rate of about 2°C/min-5°C/min; and

reducing said [ambient] temperature <u>of approximately 800°C to 900°C</u> to a boat pull temperature at a rate of about 35°C/min-65°C/min, wherein [a first] <u>said</u> oxide portion formed in step (a) <u>is a first oxide portion and</u> acts as a stress sink to a second oxide portion formed in step (b) during at least a portion of said cooling.

(19) Please amend Claim 25 as follows:

25. (Amended) A process as recited in claim 22, wherein said first oxide portion has a thickness in the range of <u>about</u> 7.5 to 20 Å.

(20) Please amend Claim 26 as follows:

26. (Amended) A process as recited in claim 22, wherein said second oxide portion has a thickness in the range of <u>about</u> 2 to 12Å.

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(21) Kindly cancel Claims 28-29 without prejudice or disclaimer.

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